

1. A virtual private network which enables private communications, over a shared MPLS network, between at least two private networks comprising:

a first router coupled to the shared MPLS network and configured to dynamically distribute first router VPN information across the shared MPLS network, wherein said first router VPN information includes a VPN identifier which is assigned to said first router;

a second router coupled to the shared MPLS network and configured to dynamically distribute second router VPN information across the shared MPLS network; wherein said second router VPN information includes a VPN identifier which is assigned to said second router;

wherein said first and second routers are also configured to establish a plurality of label switched paths therebetween; and,

wherein said VPN identifier assigned to said first router is the same as said VPN identifier assigned to said second router.

2. The virtual private network according to Claim 1 further comprising:

a first private network adaptation device selectively coupleable to said first router; and,

a second private network adaptation device selectively coupleable to said second router;

wherein when said first private network adaptation device is coupled to said first router, and said second private network adaptation device is coupled to said second router said first private network adaptation device may communicate with said second private network adaptation device.

3. The virtual private network according to Claim 2 wherein:

said first router includes said first private adaptation device; and,

said second router includes said second private adaptation device.

4. The virtual private network according to Claim 2 further comprising at least one core label switched router coupled between said first and second routers and configured to transport communications between said first and second routers.

5. The virtual private network according to Claim 1 wherein said label switched paths comprise at least two multipoint-to-point paths.

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6. The virtual private network according to Claim 5 wherein said label switched paths further comprise at least one multi-point to multi-point path.

5 7. A virtual private network which enables private communication, over a shared MPLS network, between at least two actual networks comprising:

first router means coupled to the shared MPLS network for dynamically distributing first router means VPN information across the shared MPLS network, wherein said first router means VPN information includes a VPN identifier which is assigned to said first router means;

a second router means coupled to the shared MPLS network for dynamically distributing second router means VPN information across the shared MPLS network; wherein said second router means VPN information includes a VPN identifier which is assigned to said second router;

wherein said first and second router means are also configured to establish a plurality of label switched paths therebetween; and,

wherein said VPN identifier assigned to said first router is the same as said VPN identifier assigned to said second router.

8. The virtual private network according to Claim 7 further comprising:

first private router means, selectively coupleable to said first router means, for routing communications to a node on a private network attached thereto; and,

20 second private router means, selectively coupleable to said second router means, for routing communications to a node on a private network attached thereto;

wherein when said first private router means is coupled to said first router, and said second private router means is coupled to said second router said first private router means may communicate with said second private router means.

25 9. The virtual private network according to Claim 7 wherein:

said first router means includes said first private router means; and,

said second router means includes said second private router means.

30 10. The virtual private network according to Claim 8 further comprising at least one core label switched router coupled between said first and second router means and configured to

transport communications between said first and second router means.

11. A method of automatically configuring virtual private networks over a shared MPLS network comprising:

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- creating a link between a private network router and a shared network router,
  - assigning a VPN identifier to said shared network router;
  - assigning said VPN identifier to at least one other shared network router;
  - determining all shared network routers which are assigned said VPN identifier;
  - creating at least two label switched paths between said shared network router and said at least one other shared network router.

12. The method of configuring virtual private networks according to Claim 10 wherein:  
said at least one other shared network router includes a plurality of shared network routers; and

said creating at least two label switched paths includes creating at least two unidirectional point-to-point label switched path between said shared network routers, and

13. The method of configuring virtual private networks according to Claim 12 wherein:  
said creating at least two label switched path further includes creating at least one bi-directional multi-point-to-multi-point label switched path between said shared network routers.

14. The method of configuring virtual private networks in accordance with Claim 12 wherein said creating at least two unidirectional point-to-point label switched paths is done using a next best hop route.